Complete Summary

GUIDELINE TITLE

Indeterminate renal masses.

BIBLIOGRAPHIC SOURCE(S)

Francis IR, Choyke PL, Bluth E, Bush WH Jr, Casalino DD, Jafri SZ, Kawashima A, Kronthal A, Older RA, Papanicolaou N, Ramchandani P, Rosenfield AT, Sandler C, Segal AJ, Tempany C, Resnick MI, Expert Panel on Urologic Imaging. Indeterminate renal masses. [online publication]. Reston (VA): American College of Radiology (ACR); 2005. 7 p. [54 references]

GUIDELINE STATUS

This is the current release of the guideline.

This guideline updates a previous version Bluth EI, Bush WH Jr, Amis ES Jr, Bigongiari LR, Choyke PL, Fritzsche PJ, Holder LE, Newhouse JH, Sandler CM, Segal AJ, Resnick MI, Rutsky EA. Indeterminate renal masses. American College of Radiology. ACR Appropriateness Criteria. Radiology. 2000 Jun;215 Suppl:747-52.

The appropriateness criteria are reviewed annually and updated by the panels as needed, depending on introduction of new and highly significant scientific evidence.

COMPLETE SUMMARY CONTENT

SCOPE

DISEASE/CONDITION(S)

Indeterminate renal mass

GUIDELINE CATEGORY

Diagnosis
Evaluation

CLINICAL SPECIALTY

Nephrology
Nuclear Medicine
Oncology
Radiation Oncology
Radiology
Urology

INTENDED USERS

Health Plans
Hospitals
Managed Care Organizations
Physicians
Utilization Management

GUIDELINE OBJECTIVE(S)

To evaluate the appropriateness of radiologic examinations for patients with an indeterminate renal mass

TARGET POPULATION

Adults with an indeterminate renal mass

INTERVENTIONS AND PRACTICES CONSIDERED

1. Ultrasound (US)
2. Computed tomography (CT), with and without contrast
3. Magnetic resonance imaging (MRI), with and without contrast
4. Nuclear medicine (NUC), dimercaptosuccinic acid (DMSA) scan
5. Invasive (INV) procedures
    - Arteriography
    - Aspiration/biopsy
6. X-ray, intravenous urography, intravenous pyelogram (IVP)

MAJOR OUTCOMES CONSIDERED

Utility of radiologic examinations in differential diagnosis

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

The guideline developer performed literature searches of peer-reviewed medical journals, and the major applicable articles were identified and collected.

NUMBER OF SOURCE DOCUMENTS

The total number of source documents identified as the result of the literature search is not known.

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Not Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Not stated

METHODS USED TO ANALYZE THE EVIDENCE

Systematic Review with Evidence Tables

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

One or two topic leaders within a panel assume the responsibility of developing an evidence table for each clinical condition, based on analysis of the current literature. These tables serve as a basis for developing a narrative specific to each clinical condition.

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus (Delphi)

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

Since data available from existing scientific studies are usually insufficient for meta-analysis, broad-based consensus techniques are needed for reaching agreement in the formulation of the appropriateness criteria. The American College of Radiology (ACR) Appropriateness Criteria panels use a modified Delphi technique to arrive at consensus. Serial surveys are conducted by distributing questionnaires to consolidate expert opinions within each panel. These questionnaires are distributed to the participants along with the evidence table and narrative as developed by the topic leader(s). Questionnaires are completed by the participants in their own professional setting without influence of the other members. Voting is conducted using a scoring system from 1 to 9, indicating the least to the most appropriate imaging examination or therapeutic procedure. The

survey results are collected, tabulated in anonymous fashion, and redistributed after each round. A maximum of three rounds is conducted and opinions are unified to the highest degree possible. Eighty percent agreement is considered a consensus. This modified Delphi technique enables individual, unbiased expression, is economical, easy to understand, and relatively simple to conduct.

If consensus cannot be reached by this Delphi technique, the panel is convened and group consensus techniques are utilized. The strengths and weaknesses of each test or procedure are discussed and consensus reached whenever possible. If "No consensus" appears in the rating column, reasons for this decision are added to the comment sections.

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

Internal Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Criteria developed by the Expert Panels are reviewed by the American College of Radiology (ACR) Committee on Appropriateness Criteria.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

ACR Appropriateness Criteria®

Clinical Condition: Indeterminate Renal Mass

Radiologic Exam Procedure	Appropriateness Rating	Comments
US, kidney	8	To clarify mass seen on IVP that is probably cystic or to clarify mass seen on CT that is probably a hyperdense cyst
CT, kidney, with and without contrast	8	Thin section CT
MRI, kidney, with and	8	

Radiologic Exam Procedure	Appropriateness Rating	Comments
without contrast		
NUC, kidney, DMSA scan	3	May be useful to rule out pseudomass of functioning renal tissue
INV, kidney, arteriography	3	To rule out arteriovenous malformation, arteriovenous, fistula, or renal artery aneurysm
INV, aspiration/biopsy	3	
X-ray, kidney, intravenous urography, IVP	2	May be helpful to differentiate parenchymal masses from collecting system masses.
CT, kidney, without contrast	1	
MRI, kidney, without contrast	1	
Appropriateness Criteria Scale 1 2 3 4 5 6 7 8 9 1 = Least appropriate 9 = Most appropriate		

Note: Abbreviations used in the table are listed at the end of the "Major Recommendations" field.

An indeterminate renal mass is one that cannot be diagnosed confidently as benign or malignant using the same imaging modality by which it was discovered. A renal cyst containing old hemorrhage may resemble a cystic renal cell carcinoma, or vice versa; some masses are so small (e.g., <1.5 cm) that exact determination of their benign or possibly malignant character is difficult, hence the designation indeterminate. Lesions or masses whose character and type are clearly defined by the first imaging test will not be discussed in this report.

In years past, discovery of a renal mass by excretory urography led to angiography, needle aspiration, or even exploratory surgery to characterize it accurately. The advent of ultrasonography (US) helped resolve many masses found at urography by identifying them clearly as simple cysts. Contrast-enhanced CT has eliminated, to a great degree, the need for angiographic evaluation of renal mass lesions. MRI of renal masses with fast scan techniques and intravenous gadolinium now provides imaging comparable to CT scanning. Radionuclide scintigraphy has in the past been helpful in identifying lobulated functioning renal tissue resembling a more ominous mass, but has limited applications now. The use of needle aspiration has declined as imaging techniques have improved.

Urography

The plain abdominal film has very poor sensitivity and specificity for evaluating a renal mass. IVP with nephrotomography has only 67% sensitivity in detecting renal masses 3 cm or less in diameter, and without tomography, the sensitivity is even less. In one small series, over half of small tumors were not visualized or were missed on the initial IVP. IVP also lacks specificity in separating benign from malignant cystic masses. However, the IVP continues to be an effective single test for imaging renal function, renal anatomy, and collecting system integrity. It has value in imaging the upper urinary collecting tracts, particularly of the patient with lower tract transitional neoplasm. CT urography is being used in many centers to evaluate patients with hematuria as it provides a comprehensive evaluation of the urinary tract, and is capable of detecting not only renal calculi and masses, but can also evaluate the urothelial tract for causes of hematuria.

Ultrasonography

The most common renal mass is a cyst, and US provides the most cost-effective method of defining and confirming a benign cyst. Eighty-six percent of patients with a mass detected by IVP had either a simple cyst or no evidence of mass during a subsequent US or CT evaluation; only 5% had a solid mass. When US was the next test after the IVP (78% of cases), 18% of the examinations remained indeterminate, requiring CT. Factors limiting US include the patient's body habitus, lesion location, multiple lesions, and calcification in the wall of a cystic mass and hemorrhagic fluid in a cystic mass. When CT was the initial test after urography (22% of cases), 12% of exams were indeterminate. One study concluded that US is the most cost-effective study to evaluate a suspected renal mass found by IVP. Early studies have suggested that sonography may have a problem in the detection of small <3 cm renal masses. A more recent study of von Hippel-Lindau patients using gray-scale ultrasonography detected only 70% of renal masses <2 cm in contrast to CT which showed 95% of the lesions. However, more recent studies using color and power Doppler imaging have shown improved and promising results. In one study, phase-inversion harmonic imaging when combined with B-mode sonography improved lesion conspicuity as well as accuracy in tissue characterization in a study of 114 patients. Contrast-enhanced Doppler sonography using intravenously administered contrast agents have also been shown to have the potential to improve the detection and characterization of renal cell carcinomas. In a small series, US failed to find or accurately characterize 40% of small (<3 cm) renal cell carcinomas. Conversely, in a report of a much larger series, sonography had a sensitivity of 79% in detecting small renal carcinomas 3 cm or less in diameter. In the future, color Doppler flow imaging with an intravenous US contrast agent may improve sensitivity in detecting tumor vessels and evaluating the renal vein.

Previously, sonographic findings of a small hyperechoic mass were considered diagnostic of angiomyolipoma; however, a large series showed that 61% of small (3 cm or less) solid renal cell carcinomas were hyperechoic relative to normal renal echogenicity during US. One finding suggestive of a small renal cell carcinoma was a hypoechoic rim about the solid tumor. Doppler ultrasound has been suggested as a way to further characterize solid masses; in the absence of clinical evidence of infection, a Doppler frequency shift greater than 2.5 kHz is advocated by some as a reliable indicator of malignancy. However, US can be falsely negative with avascular tumor masses and falsely positive with inflammatory masses.

Renal cysts are the most commonly discovered renal masses, and the criteria for US diagnosis of renal cysts are well defined. These criteria include that the mass is sonolucent, demonstrates good through-transmission of the sound waves with posterior enhancement, and has a thin, well-defined wall. Complex masses not fulfilling the criteria of cysts are considered indeterminate and require further evaluation, usually by CT.

Computed Tomography

The accepted criteria of a benign simple cyst are well-defined. One study developed a CT classification system for cystic renal masses, encompassing the spectrum from simple renal cyst to obvious cystic malignancy. A cyst with a thin wall and nonenhancing fluid is a Category I or benign cyst. Thin septations, thin wall calcification, or hyperdense fluid is a Category II lesion. Initial reports indicated that Category II cysts were invariably benign. The hyperdense cyst can also present a diagnostic problem in that its initial attenuation coefficients are high (50-90 Hounsfield Unit [HU]), and only 50% of these will be anechoic by US. While ultrasonography is superior to CT in depicting the internal features of cystic renal masses, the presence of calcium can obscure other features. In these instances, CT can be useful to characterize these lesions, as the presence of calcium does not hinder characterization.

Although their idea is not universally accepted, some investigators believe that certain types of Category II cysts should be in a new category termed Category IIF. These cysts have one or more of the following abnormalities: increased number of hairline septa; minimal thickening of cyst wall or septa or demonstrating minimal enhancement of septa or cyst wall; calcification, which may be thick and nodular but with no enhancing soft-tissue components; and totally intrarenal high-attenuation lesions 3 cm or more in size. These lesions, in view of their complexity when compared to Category II lesions, warrant follow-up (usually at 6-month intervals for the first year, and then annually for up to 5 years in older individuals and longer in younger individuals), to assure stability. One study reported a series of 42 category IIF lesions with a 2-year follow-up and showed that the majority of these lesions were stable and only in two cases did the lesion become more complex and subsequently prove to be renal cell carcinoma.

Class III indeterminate cystic masses are those that show thick or irregular wall calcification, irregular margins, and/or thickened or enhancing septa. These are considered to be possible malignancies, requiring surgery; nephron-sparing surgery is used for smaller lesions. An exception might be the well-imaged, well-defined cyst having only thick calcification and no soft-tissue or wall thickening and no enhancement after IV contrast. One study evaluated 81 renal cystic masses containing calcification using CT. Of these, 28 had follow-up CT and 40 had pathological proof. After analyzing their data, these authors concluded that calcification in cystic renal mass is not as an important hallmark of malignancy as enhancing soft-tissue components.

Overall about half of class III cystic lesions will be malignant, but reported percentages vary from 25 to 100%.

If a nodular or solid component is present, identification of enhancement after IV contrast is a key determinant of probable malignancy. Therefore, CT is the most important imaging technique for evaluating the indeterminate renal mass. Images done before and after contrast are critical to define the lesion; enhancement indicates a vascularized mass and, therefore, a possible malignancy. Enhancement of more than 10 HU is considered by a number of studies to be significant; others suggest an increase of 20 HU to be indicative of enhancement. Sensitivity of CT in identifying small renal masses is greater than 90%. Analysis of enhancement for neoplasm is best done in the nephrographic phase of helical CT imaging of the kidneys. False negatives may occur in the corticomedullary phase.

Although the Bosniak classification scheme is very useful for the clinical management of cystic renal masses, interobserver variation in distinguishing between Category II and Category III lesions does exist and may present problems in recommending surgical versus conservative management in some cases. In one study, 11/70 (16%) of cystic lesions classified as Category I or II by one reader were upgraded to Category III or IV by another reader.

Computed tomography enables detection of small amounts of fat (-10 HU or lower in three adjacent pixels) that identifies the benign angiomyolipoma. Fat-related to other malignant neoplasms has been reported (four cases), but these masses were either large tumors that had engulfed perinephric or renal sinus fat, or renal carcinomas that had areas of osseous metaplasia and small amounts of fat; both of these smaller carcinomas also contained central ossification/calcification. With the exception of a perirenal lipoma or liposarcoma, fat in a noncalcified mass remains specific for benign angiomyolipoma. Conversely, the CT findings of a central scar, previously felt to be specific for oncocytoma, has now been found with renal cell carcinomas, and the finding is not specific. As reported by one study, CT findings of homogeneity or a central stellate "scar" are poor discriminators in predicting oncocytoma or renal cell carcinoma, regardless of size.

The small or very small (1.5 cm or less in diameter) renal mass poses a more complex problem for CT imaging, in that volume-averaging effects occur, making it difficult to assess accurately the density on noncontrast images and to evaluate for enhancement after IV contrast administration. One of the more difficult entities to differentiate from a small renal cell carcinoma is a small dense cyst containing blood or proteinaceous material. Multidetector CT using thin overlapping reconstructions may help improve characterization of small renal masses. In a recent multidetector CT study of 37 patients with 175 small (<3 cm) renal masses, thin overlapping reconstructions were performed and compared to routine 5 mm thick sections to determine if the thin overlapping reconstructions could improve detection and characterization of small renal masses. Lesion characterization for cysts improved from 29-84% when thin overlapping reconstructions were used, and the overall number of indeterminate lesions was reduced from 69% to 53%.

Very small solid nodules on the kidney are common; more than 50% of patients had some type of very small renal nodule at necropsy, and about 1/3 of these were termed an "adenoma." The small renal adenoma is currently considered to be a "renal adenocarcinoma of low metastatic potential." The low metastatic potential of small renal cell carcinomas (less than 3 cm in diameter) is supported by many series. One author feels that a small (less than 1.5 cm diameter)

indeterminate renal mass can be followed until it reaches 2 cm size. Although the solid lesion up to 3 cm in diameter has low metastatic potential, once it has been characterized as a solid, nonfat-containing mass it should be treated aggressively, usually with nephron-sparing surgery. If the patient's clinical condition militates against surgery or if there is surgical risk of causing the patient to become dialysis-dependent, such lesions, because of their low metastatic potential when small, can be followed with CT. Surgery is reconsidered if the mass shows rapid growth.

The effect of early detection of a very small renal mass by current technology operates insidiously to alter our perception of how radiological tests affect patient care, especially the detection and management data affected by "length bias" and "lead bias". Therefore, a "wait and see" approach is especially appropriate for management of the very small, asymptomatic renal mass in an elderly patient. For a younger, healthy patient, the approach is somewhat different: 1) US is used first to confirm if it is a simple, benign cyst; 2) if US is not confirmatory, CT is used before and after IV contrast to determine if it enhances; 3) if there is no enhancement, nothing further need be done; 4) if it enhances, a follow-up is done at 6 months, 1 year, and then yearly to chart growth; 5) if it grows to 2 cm in diameter, it should be removed by kidney-sparing surgery.

Magnetic Resonance Imaging

Conventional spin echo imaging does not provide adequate definition of most renal masses. However, fast imaging techniques, utilizing intravenous gadolinium contrast agents, now provide sensitivity and specificity similar to CT in detecting contrast enhancement and identifying a mass requiring surgery. In one study, MRI was superior to CT in the correct characterization of complex benign cystic masses. MRI with gadolinium and fast imaging techniques are particularly applicable to patients with renal insufficiency for whom conventional contrast would be significantly nephrotoxic, and also in patients with severe allergic history to conventional contrast agents. In a recent study, 73 patients with 93 renal masses underwent contrast-enhanced MRI, and quantitative enhancement with signal intensity measurement analysis was compared to qualitative analysis of enhancement with image subtraction to determine which was superior for detecting malignancy. Sensitivity and specificity for diagnosing malignancy based on enhancement were 95% and 53%, respectively, for quantitative and 99% and 58%, respectively, for qualitative analysis. Three of four malignant lesions incorrectly assigned as benign by quantitative method were hyperintense on unenhanced MR images. All were accurately diagnosed as being malignant by qualitative method.

In a recent study, 69 cystic renal masses were evaluated using CT and MRI within one year of each other, with consensus analysis by two radiologists. Wall thickness, septal thickness, number of septa, enhancement, and lesions were classified using the Bosniak Classification. There was CT and MR agreement in 56/69 (81%) of lesions and disagreement in 13/69 (19%) of lesions. In 8 (12%) more septa were seen, and in 7 (10%) increased wall and or septal thickness were seen on MRI. In two lesions (3%) CT and MRI enhancement features were different. Overall MRI upgraded seven lesions: from category II to IIF in two, from IIF to III in three and III to IV in two.

CT and MRI were felt to be similar in evaluation of most renal cystic mass lesions. However, MRI may depict additional findings such as increase in number of septa, septal and/or wall thickness, and enhancement. Such findings would result in MRI upgrading cystic lesions and thus may alter patient management. The authors recommend that it is wise to be cautious when interpreting MRI of complex cystic renal masses and more specifically those that are borderline between Categories IIF and III without additional correlative imaging. But like CT, MRI techniques do not allow differentiation of oncocytoma from renal cell carcinoma.

Nuclear Medicine

Radionuclide scintigraphy with a cortical imaging agent (e.g., DMSA) has a limited role in evaluation of the indeterminate renal mass, being used primarily to identify the so-called column of Bertin or junctional zone, which may be causing a pseudotumor effect on IVP or US. Fluorin-18 2-fluoro-2-deoxy-D-glucose positron emission tomography (FDG PET) shows great promise in detecting renal tumors and characterizing indeterminate renal cysts. Although there were false negatives in both the tumor group and indeterminate cyst group, there were no false positives. A positive PET scan in the appropriate clinical setting obviates the need for cyst aspiration.

Angiography

Although two-thirds of renal tumors have enough vascularity to allow identification of tumor neovascularity, one-third will be of such a hypovascular or "avascular" state that angiography will not help identify of the lesion as benign or malignant. This is even true of renal carcinomas presenting with acute perirenal hemorrhage. For some applications of nephron-sparing surgery for small renal neoplasms, the urologic surgeon uses aortography or selective angiography to provide a road map to assist in resection.

Aspiration/Biopsy

Biopsy of the indeterminate renal mass has a limited role in the current era of high-quality imaging. In a survey by the Society of Uroradiology reporting on approximately 16,000 cases, 92% of uroradiologists accepted the US findings of a cyst as being sufficient for diagnosis and 100% accepted the CT criteria of a simple or category II cyst as being sufficiently diagnostic. If cyst aspiration is done, cytologic evaluation is considered the laboratory study of choice. Although aspiration of clear fluid usually indicates a benign cyst, clear fluid was found in 19 cystic renal cell carcinomas, only 11 of which had positive cytologic evaluation. Therefore, the gross and laboratory analysis of aspirated fluid is not conclusive and CT is considered the "gold standard" in evaluating cystic masses. However, aspiration or biopsy does have certain indications: confirmation of an infected cyst or abscess; and identification of lymphoma or a metastasis in a kidney where either diagnosis would affect clinical management.

Initial laparoscopic evaluation of complex renal cysts may replace open surgery in some cases. Laparoscopic biopsy of cystic renal cell carcinoma followed by open surgery does not seem to increase incidence of seeding or metastases.

Summary

Although the IVP is still being used in a limited manner to evaluate patients with hematuria at most institutions, CT urography has made significant advances in the past few years and has the potential to replace IVP as it is a comprehensive exam for the evaluation of hematuria as it is capable of detecting renal calculi and renal masses, as well as evaluating the urinary tract for urothelial neoplasms. Contrast-enhanced CT is the modality of choice for evaluating indeterminate renal lesions that are suspicious for malignancy. The use of multidetector CT (MDCT) and thin overlapping reconstructed images has improved the characterization of small <3 cm masses and decreased those diagnosed as indeterminate renal masses. For those patients who cannot tolerate iodinated intravenous contrast material due to renal dysfunction and allergies, fast imaging technique MRI with gadolinium contrast is advised. The newer techniques have shown that MRI is also capable of characterizing indeterminate renal masses. When CT and MRI are compared in the evaluation of cystic renal masses, MRI appears to be more sensitive and tends to upgrade cystic lesions. Thus caution is advised when using MRI findings to direct clinical management at this time. Radionuclide scintigraphy has a role limited to confirming normal renal tissue. Angiography is used primarily to define vascular anatomy before nephron-sparing surgery. Renal aspiration or biopsy has few indications: confirming an infected cyst or identifying lymphoma or a metastasis as the cause of the indeterminate renal mass.

Abbreviations

- CT, computed tomography
- DMSA, dimercaptosuccinic acid
- INV, invasive
- IVP, intravenous pyelogram
- MRI, magnetic resonance imaging
- NUC, nuclear medicine
- US, ultrasound

CLINICAL ALGORITHM(S)

Algorithms were not developed from criteria guidelines.

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The recommendations are based on analysis of the current literature and expert panel consensus

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

Selection of appropriate radiologic imaging procedures for evaluation of patients with an indeterminate renal mass

POTENTIAL HARMS

Ultrasound (US) can be falsely negative with avascular tumor masses and falsely positive with inflammatory masses.

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

An American College of Radiology (ACR) Committee on Appropriateness Criteria and its expert panels have developed criteria for determining appropriate imaging examinations for diagnosis and treatment of specified medical condition(s). These criteria are intended to guide radiologist, radiation oncologist, and referring physicians in making decisions regarding radiologic imaging and treatment. Generally, the complexity and severity of a patient's clinical condition should dictate the selection of appropriate imaging procedures or treatments. Only those exams generally used for evaluation of the patient's condition are ranked. Other imaging studies necessary to evaluate other co-existent diseases or other medical consequences of this condition are not considered in this document. The availability of equipment or personnel may influence the selection of appropriate imaging procedures or treatments. Imaging techniques classified as investigational by the U.S. Food and Drug Administration (FDA) have not been considered in developing these criteria; however, study of new equipment and applications should be encouraged. The ultimate decision regarding the appropriateness of any specific radiologic examination or treatment must be made by the referring physician and radiologist in light of all the circumstances presented in an individual examination.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

IMPLEMENTATION TOOLS

Personal Digital Assistant (PDA) Downloads

For information about availability, see the "Availability of Companion Documents" and "Patient Resources" fields below.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Getting Better

IOM DOMAIN

Effectiveness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Francis IR, Choyke PL, Bluth E, Bush WH Jr, Casalino DD, Jafri SZ, Kawashima A, Kronthal A, Older RA, Papanicolaou N, Ramchandani P, Rosenfield AT, Sandler C, Segal AJ, Tempany C, Resnick MI, Expert Panel on Urologic Imaging. Indeterminate renal masses. [online publication]. Reston (VA): American College of Radiology (ACR); 2005. 7 p. [54 references]

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

1996 (revised 2005)

GUIDELINE DEVELOPER(S)

American College of Radiology - Medical Specialty Society

SOURCE(S) OF FUNDING

American College of Radiology (ACR) provided the funding and the resources fro these ACR Appropriateness Criteria®.

GUIDELINE COMMITTEE

Committee on Appropriateness Criteria; Expert Panel on Urologic Imaging

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Panel Members: Isaac R. Francis, MD (Principal Author); Peter L. Choyke, MD (Panel Chair); Edward Bluth, MD; William H. Bush, Jr, MD; David D. Casalino, MD; S. Zafar H. Jafri, MD; Akira Kawashima, MD, PhD; Alan Kronthal, MD; Robert A. Older, MD; Nicholas Papanicolaou, MD; Parvati Ramchandani, MD; Arthur T. Rosenfield, MD; Carl Sandler, MD; Arthur J. Segal, MD; Clare Tempany, MD; Martin I. Resnick, MD

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

GUIDELINE STATUS

This is the current release of the guideline.

This guideline updates a previous version Bluth EI, Bush WH Jr, Amis ES Jr, Bigongiari LR, Choyke PL, Fritzsche PJ, Holder LE, Newhouse JH, Sandler CM, Segal AJ, Resnick MI, Rutsky EA. Indeterminate renal masses. American College of Radiology. ACR Appropriateness Criteria. Radiology. 2000 Jun;215 Suppl:747-52.

The appropriateness criteria are reviewed annually and updated by the panels as needed, depending on introduction of new and highly significant scientific evidence.

GUIDELINE AVAILABILITY

Electronic copies: Available in Portable Document Format (PDF) from the American College of Radiology (ACR) Web site.

ACR Appropriateness Criteria® Anytime, Anywhere™ (PDA application). Available from the ACR Web site.

Print copies: Available from the American College of Radiology, 1891 Preston White Drive, Reston, VA 20191. Telephone: (703) 648-8900.

AVAILABILITY OF COMPANION DOCUMENTS

The following is available:

- ACR Appropriateness Criteria®. Background and development. Reston (VA): American College of Radiology; 2 p. Electronic copies: Available in Portable Document Format (PDF) from the American College of Radiology (ACR) Web site.

PATIENT RESOURCES

None available

NGC STATUS

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